

Do gophers dig radioactive wastes?

Plans for safeguarding the integrity of buried radioactive wastes usually include schemes for limiting both intentional and inadvertent human intrusion into waste sites. But what about nonhuman interlopers? Researchers at Los Alamos National Laboratory report in the June *HEALTH PHYSICS* that they've encountered pocket gophers (*Thomomys bottae*) with a proclivity for burrowing into the cover of a low-level radioactive-waste burial site. Except for the gopher tunneling, the site T.E. Hakonson, J.L. Martinez and G.C. White studied had sat undisturbed since 1977.

At this particular site, wastes were buried almost 4 feet below soil and "crushed tuff" (the material excavated from the gravesite before the wastes were laid to rest). Marking off a region 0.95 hectare (nearly 2½ acres) in size, the team monitored the site cover for 401 days. Over that period, 1,998 separate gopher mounds were recorded — an average of five new mounds per day per hectare. The rodents proved especially active during late summer and fall, excavating an average of 130 pounds per hectare daily into their surface mounds. Over the entire study period, the burrowers moved more than 12 tons of earth.

As prodigious as these activities sound, the estimated 1.7 miles of channels they produced probably account for no more than a total 8.3-cubic-meter underground void. Based on the number of mounds and estimated dimensions of this tunneling network, the Los Alamos team expects total mound soil volume equals no more than what it would take to cover about 1 percent of the ground surface to a depth of 4.2 inches on the study plot.

Since gamma-radiation readings of the unearthed material were no higher than global fallout levels, it doesn't appear the actual graves were intruded. However, the researchers caution, these animals could seriously affect the integrity of waste-burial plots in many ways generally not considered — such as increasing water infiltration rates, displacing vertically chemicals in the soil, or mobilizing buried wastes should animals penetrate actual graves. Though gopher activities did not appear to undermine the integrity of the study site during its observation, the researchers recommend that procedures for long-term waste burial factor in potential effects of plants and animals.

Look, ma, no fluoride

Two water-treatment fluoride chemicals that are used by more than 4,600 U.S. cities and towns to help fight tooth decay are in short supply, U.S. Centers for Disease Control officials recently reported. The two chemicals — sodium silica fluoride and hydrofluosilicic acid — are byproducts of phosphate fertilizer production. Supplies of the two chemicals are quickly disappearing as a result of a severe cutback in phosphate fertilizer production, which in turn is due to decreased demand. The shortage is expected to last 3 to 6 months, according to Jack Jackson and Thomas Reeves of CDC in Atlanta, Ga.

The CDC officials say there are other known ways to synthesize the two fluoride chemicals, but these means are too expensive to use during what is presumed to be a temporary decline in phosphate fertilizer production. A third fluoride substance — sodium fluoride — already is used in toothpastes and in some small-town water systems. But because it costs at least \$1 per pound (compared with 10 to 25 cents per pound for the two fertilizer-related fluorides), sodium fluoride is too expensive to be more widely used in water.

The CDC officials estimate that use of fluoridated water can reduce the incidence of dental caries by 50 to 65 percent. A marked increase in the incidence of cavities may be apparent, Jackson and Reeves say, if the fluorine shortage should continue for at least nine months.

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At long last, the solar bank may open

President Reagan and five of his Cabinet secretaries were placed "under a court-supervised obligation" to start disbursing some of the \$22 million that Congress had budgeted for this year's operation of the Solar Energy and Energy Conservation Bank. The June 30 U.S. District Court ruling came in response to a suit filed by public-interest groups, would-be bank users and other interested parties — including five congressmen (SN: 4/24/82, p. 283). Although the bank was to have officially opened its doors for business two years ago, in a direct challenge to the Congress the Reagan administration impounded the bank's operating funds — a budgetary equivalent to locking its doors. The bank was created to assist low- and middle-income homeowners, renters, owners of small businesses and farmers for investments in solar and energy-conserving technologies.

Legal briefs

- "Creation science" (SN: 1/16/82, p. 44) was dealt another blow June 28 when U.S. District Judge Frank Polozola dismissed a suit against the Louisiana Department of Education, saying his court had no "jurisdiction" in the suit. That suit, filed by the state's attorney general and creation-science supporters, was attempting to force the Education Department to implement a law passed last year mandating creation science be given balanced treatment in public-school courses teaching evolution.
- In New York, the state Supreme Court Appellate Division upheld a worker's compensation award (SN: 4/25/81, p. 270) — the first for "microwave sickness" — made to the widow of Samuel Yannon. Her award amounted to \$29,000 in back payments and \$45 a week for life (or until remarriage). In his opinion, Judge J. Kane explained that "our review is limited to whether there is substantial evidence in the record to support the [earlier] decision." And, he concluded, "there is substantial evidence to establish the necessary causal relationship between [Yannon's] exposure to microwave radiation . . . and his ultimate death."
- Owners of the Three Mile Island-1 power plant, dissatisfied with an appellate-court ruling that the psychological impacts on nearby residents must be taken into account before a decision can be made on the plant's reopening (SN: 1/23/82, p. 55), have petitioned the Supreme Court for a reversal.

Reagan reprocessing nuclear-fuel policy

In a turnabout from existing policy, the Reagan administration last month decided to offer certain foreign buyers of nuclear fuel a blanket approval to both reprocess that fuel and to use any plutonium recovered for peaceful purposes. Formerly, all fuel produced in the United States had to be returned for reprocessing or storage in the United States after use, except in cases where a time-consuming, specific exemption had been granted. That policy was considered the best safeguard against the possible surreptitious diversion to weapons of any bomb-grade plutonium produced in the fuel-recycling process.

In a recent circular, the State Department announced that the new fuel policy will not apply to activities of or involve transfers to countries "where it would pose a [weapons] proliferation risk." What this means is unclear, since details of the new policy have formally been classified as secret. And predictably, critics in the Congress are already arming to challenge the directive.

In general, the policy is expected mostly to benefit Japan and allies in Western Europe. It also paves the way for sales to those foreign powers of U.S. reprocessing technology — a commodity formerly prohibited from export. This focus on foreign nuclear sales results from a recent federal review of policy options aimed at revitalizing the ailing (SN: 6/5/82, p. 374) U.S. industry.

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